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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/492,749	01/27/2000	Christian Francois Michel Dujarric	Q57649	1328

7590 01/17/2002

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EXAMINER

GARTENBERG, EHUD

ART UNIT	PAPER NUMBER
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3746

DATE MAILED: 01/17/2002

/ 1

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/492,749

Applicant(s)

DUJARRIC, CHRISTIAN
FRANCOIS MICHEL

Examiner

Ehud Gartenberg

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 December 2001.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 10.
- 4) ☒ Interview Summary (PTO-413) Paper No(s) 11.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1-8 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The nuclear core 18 and heat engine 19 of Fig. 1 are not enabled and they are essential to the practice of the invention, because they rotate all the propellant pumps 10, 14, 16 and electricity generator 11 which feeds the critical induction loop 4. Note that the Borowski article in Aerospace America of 7/1992 does not enable said nuclear-core/engine combination either, in spite of claim to the contrary in the present application on p. 12, ll. 25-32 and in the response filed December 10, 2001. Regarding Applicant's argument in said response that broadly speaking steam generation by nuclear reactors, and subsequent use of said steam in heat engines were known in the art at the time of the claimed invention, note that: 1) the prohibitive weight of conventional, water-cooled nuclear power reactors and the associated safety devices makes them unsuitable for flight applications. 2) In no specific place does Borowski refer to a known nuclear reactor that generates steam and that has ever been flown on a rocket, or tested in a simulated rocket environment. as a flight-qualified hardware. The

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Borowski article is speculative in substance and cannot be relied upon as enabling such a claimed reactor.

The disclosure is also not enabling 1) how to make a Brayton cycle with a pressure ratio of 82.2 (p. 15, l. 15), and 2) the factor 0.2 on p. 17, l. 15 (denominator of the formula). Note that T3 is 2000K (and not 200K as mentioned in the response), and that enabling of the invention does not refer to substituting speculative numbers in a formula, but actually teaching the apparatus that can produce and withstand said pressure and temperature conditions in a flight environment. Regarding the factor 0.2, the disclosure does not teach how this number was deduced or measured, and therefore this figure is also considered to be speculative. "Speculative" is used here in the sense of hypothetical figures of merit used routinely in engineering feasibility studies. The fact that certain critical values are assumed (or speculated) to be feasible does not necessarily make those values feasible or attainable in the real world.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 1 recites the limitation "the" in "The propulsion device". There is insufficient antecedent basis for these limitations in the claim.

Specification

4. The disclosure is objected to because of the following informalities: the teaching on p. 9, ll. 25-26 of frequencies upwards of 10kHz does not agree with the teaching on p. 13, l. 30, of a frequency of 30,000 rpm, i.e., 500Hz. The explanation given on p. 8, ll.

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1-10 of the response filed 12/10/2001 do not clarify the number of poles that Applicants intend to use in order to produce an alternating current of 60,000Hz from a rotor rotating at 500Hz. If an unusually large number of poles will be claimed, then the question will arise whether or not the circumference of the alternator can physically accommodate that many poles in the confined space available, which is an enablement issue. Note that the teaching on p. 13, ll. 30 *et seq.*, and in the response filed on 12/10/2001 on p. 8 first paragraph is not accurate because 60,000Hz are not of the same order of magnitude with 500Hz.

Appropriate correction is required.

The condition of the disclosure precludes a complete examination, but to the extent that the invention can be understood, a search of prior art has been conducted and the following rejections have been made. Lack of rejection over the prior art should not be interpreted as allowable subject matter.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-2 are rejected under 35 U.S.C. 102(b) as being anticipated by Dailey et al. 5,170,623, which teach the invention substantially as disclosed and as claimed: a propulsion device 10 having a chamber 12, a nozzle (unnumbered), and any one of the

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induction loops 16 connected to an inherent high-frequency (20,000Hz, see Fig. 3 for a period time of 50 microseconds) electricity generator, and a divergent section (unnumbered) downstream the loop. Note that the current in loops 16 also inherently heats the ejected gases, as disclosed and as claimed.

The arguments filed by the Applicant are not convincing, because as claimed the structural limitations of the claimed invention do not define over Dailey which meets the same limitations as the apparatus claimed. Regarding the inherency of the heating by the alternating current, note that a similar apparatus taught by Curtis 3,159,966 is taught as heating the non-ionized gas due to its exposure to the alternating current (col. 3, ll. 40-43).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dailey as discussed above, in view of the fact that it was conventional in the art at the time of the claimed invention to re-generatively cool parts of liquid rocket motors using one of the propellants, hence heating the propellant upstream and before the injector.

9. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dailey as applied to claim 1 above, and further in view of Oberly 4,739,200, which

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teaches to generate high-voltage high-power electricity for aerospace applications (col. 1, ll. 48-50, and col. 2, ll. 46) by cooling (i.e., heat exchanging) the generator with liquid hydrogen (col. 1, l. 58 and col. 3, ll. 3-9). It would have been obvious to one of ordinary skill in the art at the time of the claimed invention to cool the Dailey generator with a propellant fluid as taught by Oberly, in order produce high-voltage high-power electricity with minimum weight as taught by Oberly. Note that liquid hydrogen was conventionally used in LH2/LOX rocket engines at the time of the claimed invention (Oberly, Fig. 8, 40 and 52), and therefore the Oberly engine had two separate inlets, one for LH2 and the other for LOX.

Applicant's objection to the use of Oberly '200 as being non-analogous art is not convincing in light of Oberly's specific teaching to the contrary, i.e., Oberly's invention specifically being disclosed as applicable for aerospace applications on col. 2, l. 46.

Applicant is reminded that lack of rejection over the prior art should not be interpreted as allowable subject matter, in view of the rejection under 35USC112, 1st paragraph.

Response to Arguments

10. Applicant's arguments filed 12/10/2001 have been fully considered but they are not persuasive for reasons discussed in detail above.

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Conclusion

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

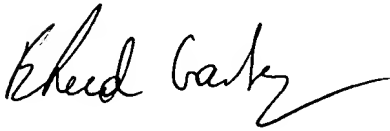
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ehud Gartenberg whose telephone number is 703/308-2634. The examiner can normally be reached on Monday-Thursday.

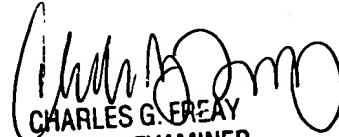
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy S Thorpe can be reached on 703/308-0102. The fax phone numbers for the organization where this application or proceeding is assigned are 703/872-9302 for regular communications and 703/872-9303 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703/308-0861.



EG
January 15, 2002



CHARLES G. FREAY
PRIMARY EXAMINER